



UNPRECEDENTED CHALLENGES TO HUMAN PROSPERITY AND SURVIVAL IN THE TWENTY-FIRST CENTURY

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WE ARE LIVING OFF OUR LIFE SUPPORT SYSTEMS IN AN UNHEALTHY, DEGRADING, INEQUITABLE AND UNSUSTAINABLE MANNER.

State of Earth's Ecosystems Since 1950

- 50% of the wetlands and 50% of the forests are gone¹
- 70% of the world's fisheries are in danger²
- 65% of agricultural lands have seriously degraded soil³
- Freshwater availability per person is down 50% since 1950⁴; groundwater over-pumping by 160 billion cubic meters per year, the amount needed to provide 10% of world's grain supply⁵

Worldwide Health Problems

- 20% of population lack clean water⁶
- 40% of population lack adequate sanitation⁷
- 20% of population lack adequate housing⁸
- 20% of population suffer from malnutrition⁹ (35% under age 5)
- 35,000 people die every day from hunger related causes, most of them children¹⁰
- A quarter of a million children die each week of malnutrition and preventable diseases¹¹
- Resurgence of infectious diseases – AIDS, TB pandemics¹²
- Average person has 500 synthetic chemicals in body fat that didn't exist in 1920

Global Climate Change

- Atmospheric CO₂ concentration has increased by 31% since 1750. The present CO₂ concentration has not been exceeded during the past 420,000 years, and not likely during the past 20 million years. The current rate of increase is unprecedented during at least the past 20,000 years.¹³
- The globally averaged surface temperature is projected to increase by 1.4 to 3.5°C over the period 1990-2100. The projected rate of warming is much larger than the observed changes during the twentieth century and is very likely to be without precedent during at least the last 10,000 years.¹⁴
- The ten warmest years have occurred since 1983, seven of them since 1990. The twentieth century was the warmest in the last 1,000 years. The 1990s were the warmest decade and 1998 was the single warmest year of the past millennium¹⁵
- The Intergovernmental Panel on Climate Change found in 2000 that¹⁶:
 1. Climate is changing faster than predicted
 2. Planet systems are much more sensitive to small changes than previously thought

- IPCC projects that sea level will rise one half foot to three feet over the next century, threatening low-lying coastal areas¹⁷
- Increased health problems — heat-induced death and disease, worse air pollution, damaged crops and depleted water resources, spread of infectious and vectorborne diseases¹⁸
- Increased frequency of extreme weather events — more droughts, flooding storms, decreased snowmelt¹⁹:
 1. 300 million people were displaced by natural disasters in 1998
 2. Economic losses for natural disasters was greater in 1998 (\$92 billion) than in all of the 1980s
- Melting of polar ice caps and erosion of glaciers occurring at unprecedented rates²⁰
- Negative impact on forests, birds and other wildlife²¹
- Bleaching of corals from warmer water²²
- Davos meeting of the World Economic Forum held in January 2000, hundreds of business and government leaders agreed climate change is "the greatest challenge facing the world . . ." ²³
- Atmospheric concentration of CO₂ is higher than it has been for 160,000 years and is growing exponentially²⁴
- According to the IPCC, a 70% decrease in greenhouse gases is necessary to avoid doubling CO₂ in the atmosphere²⁵

U.S. Energy Consumption

- U.S. is 4.5% of world's population and consumes 25% of the world's energy²⁶
- Energy use of the human economy grew sixtyfold between 1860 and 1985, and is projected to grow by another 75% by 2020²⁷
- 54% of U.S. energy consumption is directly or indirectly related to buildings and their construction²⁸
- Over 30% of the total energy and 60% of the electricity use in the United States is in buildings²⁹
- This energy use produces nearly one-quarter of the country's total carbon emissions³⁰
- More than 25% of all new urban growth is devoted solely to auto travel³¹
- 6.6 tons (@15,000 pounds carbon equivalent) of greenhouse gases are emitted per person every year in the U.S. 82% are from burning fossil fuels to generate electricity and power our cars³²
- 2300 pounds of carbon equivalent per person (16% of individual greenhouse gas emissions) are released to the atmosphere through our use of personal transportation every year³³

Habitat Alteration

- Sprawl is gobbling up forests and farmland at 364 acres per hour³⁴, and straining community's ability to provide important infrastructure and education while impoverishing sections of poor and people of color
- Share of species vulnerable or in immediate danger of extinction³⁵:
 1. 11% of 8615 bird species
 2. 12% of 4,355 mammal species
 3. 29% of all fish species

Resource Consumption

- 86% of the world's resources is consumed by 20% of the population³⁶
- Americans consume 125 pounds of material per person per day (23 tons per person per year) in fuels, forests, grasslands, metals, minerals, stone and cement and agricultural products³⁷
- Making 100 pounds of product produces 3,200 pounds of waste³⁸
- 94% of the materials extracted for use in manufacturing durable products become waste before the product is even manufactured³⁹

- Reduce nonrenewable resource use per unit of industrial output by 80% and pollution production per unit of output by 90%⁴⁰
- World economic growth will increase 4–5 times by 2050⁴¹

The Gap Between Rich and Poor is Expanding

- Worldwide income ratio of the richest 20% to the poorest 20% is widening (was 30:1 in 1960, 92:1 in 1995)⁴²
- The gap is also up in industrialized countries. U.S. Ex: From 1989-97, 85.8% of the spectacular stock market gains went to the richest 10% of population; 40% of the gains to the richest 1%.⁴³

One Billion People Unemployed or Underemployed⁴⁴

- Even in U.S., young people are uneasy about their economic future⁴⁵
- 50% of the world's population is surviving on less than \$2 a day⁴⁶

Population Growth

- World population will reach 8–10 billion in next 50 years⁴⁷
- Fertility rate is down 50%, but almost 80 million people are still being added each year⁴⁸
- Population momentum: 15% of the world's population is girls under age 15⁴⁹

Globalization Effects

- Past 50 years: the volume of goods traded increased 17 times (from \$311B to \$5.4 trillion)⁵⁰
- Since 1970, the volume of foreign direct investment increased 15 times to \$644 B⁵¹
- Since 1970, transnational corporations increased from 7000 to 60,000⁵²

Social Stability and National Security

- Authority of nation states being eroded by globalization⁵³
- WTO – free trade takes precedence over social, worker health and environmental concerns⁵⁴
- Without social stability, market economy won't work⁵⁵

UNPRECEDENTED IN HISTORY

- Humans are pervasive and dominant forces in the health and well being of the earth. We are the first generation capable of determining the habitability of the planet for humans and other species⁵⁶
- Limiting factors for future economic growth⁵⁷:
 1. Natural capital (example: fish not fishing boats or net size)
 2. Social capital (example: market corrections, equity and stability)

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- ¹ A Guide to World Resources 2000-2001: People and Ecosystems: The Fraying Web of Life, a report from the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the World Bank, and the World Resources Institute, 2000., pp. 14, 16.
- ² Ibid., p. 12.
- ³ Ibid., p. 8.
- ⁴ Human Development Report 1998, a report from the United Nations Development Programme, 1998., p. 4.
- ⁵ Vital Signs 2000, a book from the Worldwatch Institute, 2000.
- ⁶ "Of the 4.4 billion people in developing countries, nearly 3/5 lack basic sanitation. Almost a third have no access to clean water. A quarter do not have adequate housing." Human Development Report 1998., p. 2.
- ⁷ Ibid.
- ⁸ Ibid.
- ⁹ State of the World 2000, a book from the Worldwatch Institute, 2000., p. 59.
- ¹⁰ Beyond the Limits, An Executive Summary, Donella Meadows, Dennis Meadows, Jorgen Randers, 1992, p. 9.
- ¹¹ True Survivors: The World Cannot Stand Much Reality, from The Global Citizen, Donella Meadows, September 1, 2000.
- ¹² Vital Signs 2000, a book from the Worldwatch Institute, 2000.
- ¹³ IPCC WGI Third Assessment Report, Shanghai Draft, Summary for Policymakers, 21-01-2001, p. 4.
- ¹⁴ IPCC WGI Third Assessment Report, Shanghai Draft, Summary for Policymakers, 21-01-2001, p. 8.
- ¹⁵ Global Warming and Our Changing Climate, United States Environmental Protection Agency. April 2000, p. 1.
- ¹⁶ Intergovernmental Panel on Climate Change Website [<http://www.ipcc.ch/>].
- ¹⁷ Global Warming and Our Changing Climate, United States Environmental Protection Agency. April 2000, p. 3. (See also <http://www.epa.gov/globalwarming/climate/trends/sealevel.html>.)
- ¹⁸ Global Warming and Our Changing Climate, United States Environmental Protection Agency. April 2000, p. 3.
- ¹⁹ Vital Signs 2000., p. 74.
- ²⁰ Glacier Loss Seen as Clear Sign of Human Role in Global Warming, Andrew C. Revkin, The New York Times, February 19, 2001.
- ²¹ Global Climate Change Impacts, United States Environmental Protection Agency webpage [<http://www.epa.gov/globalwarming/impacts/index.html>].
- ²² State of the World 2000, Lester Brown, Christopher Flavin, Hilary French, Sandra Postel, Linda Starke, 2000, p. 6.
- ²³ World Wildlife Federation, Climate Change Campaign Website [<http://www.panda.org/climate/savers.cfm>].
- ²⁴ Beyond the Limits, An Executive Summary, Donella Meadows, Dennis Meadows, Jorgen Randers, 1992, p. 11.
- ²⁵ State of the World 2001, Lester Brown, Christopher Flavin, Hilary French, Worldwatch Institute, 2001, p. 88.
- ²⁶ Vital Signs 1999, Lester Brown, Michael Renner, Brian Halweil, Worldwatch Institute, 1999, p. 60.
- ²⁷ Beyond the Limits, An Executive Summary, Donella Meadows, Dennis Meadows, Jorgen Randers, 1992, p. 10.
- ²⁸ Sustainable Construction in the United States of America, a report from the Georgia Institute of Technology, 1998. [<http://www.arch.gatech.edu/crc/CIBW82Report.htm>]
- ²⁹ Ibid.
- ³⁰ Ibid.
- ³¹ Building Locally, Thinking Globally, an article by Asher Derman in "Lessons Learned from Four Times Square" from Earth Day New York., p. 53.
- ³² Global Climate Change Individual Emissions, United States Environmental Protection Agency webpage [<http://www.epa.gov/globalwarming/emissions/individual/index.html>].
- ³³ Global Climate Change Individual Emissions On the Road, United States Environmental Protection Agency webpage [<http://www.epa.gov/globalwarming/emissions/individual/ontheroad.html>].
- ³⁴ New Acres of Developed Land in Metropolitan Areas, 1992-1997, an article from the National Resources Inventory, 1997. [<http://www.nhq.nrcs.usda.gov/land/meta/m5123.html>]
- ³⁵ Human Development Report 1998., p. 49.
- ³⁶ Ibid., p. 2.
- ³⁷ Natural Capitalism, Paul Hawken, Mother Jones, March/April 1997, p. 44.
- ³⁸ Stuff: The Secret Lives of Everyday Things, John C. Ryan and Alan Thein Durning, Northwest Environment Watch, 1997, p. 4.
- ³⁹ Natural Capitalism, Paul Hawken, Mother Jones, March/April 1997, p. 49.
- ⁴⁰ Beyond the Limits, An Executive Summary, Donella Meadows, Dennis Meadows, Jorgen Randers, 1992, p. 7.
- ⁴¹ World Bank, World Development Report 2000/2001 (New York: Oxford University Press, 2000).
- ⁴² Human Development Report 1998., p. 29.
- ⁴³ The Dow Passes Ten Thousand — Hooray? from The Global Citizen, Donella Meadows, April 15, 1999.
- ⁴⁴ Vital Signs 2000., p. 142.

⁴⁵ International Labour Organization P [<http://www.ilo.org>].

⁴⁶ True Survivors: The World Cannot Stand Much Reality, from The Global Citizen, Donella Meadows, September 1, 2000.

⁴⁷ And Baby Makes 6 Billion, an article from the San Francisco Chronicle, 1999.

⁴⁸ Ibid.

⁴⁹ United Nations, World Population Prospects: The 1998 Revision (New York, December 1998).

⁵⁰ Globalization Straining Planet's Health: Cross-Border Alliances Needed to Safeguard Environment, an article by the Associated Press, September 2000.

⁵¹ Ibid.

⁵² Ibid.

⁵³ Ibid.

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ And Baby Makes 6 Billion.

⁵⁷ A Road Map for Natural Capitalism, an article by Amory B. Lovins, L. Hunter Lovins and Paul Hawkin from the Harvard Business Review, May-June 1999.